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Bulletin of the Museum of Comparative Zoölogy,
at Harvard College, CAMBRIDGE, Mass.
Vol. IV.

THE TERRESTRIAL

AIR-BREATHING MOLLUSKS

OF THE

UNITED STATES AND THE ADJACENT TERRITORIES
OF NORTH AMERICA.

DESCRIBED AND ILLUSTRATED

By W. G. BINNEY.

VOL. V.

PLATES.

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a. 65

X. EXPLANATION OF PLATES OF VOL. III.

For the lettering of the plates of Vol. III. the following is to be substituted.

Plate I. Mesodon major.
II. albolabris.
III. multilineata.
IV. clausa (middle line).
Mitchelliana (outline figures).
V. Columbiana.
VI. Arionta intercisa (central figure).
Californiensis (outer figures).
redimita (upper and lower figures).
VI. a. Nickliniana.
VII. Mesodon Pennsylvanica.
VIII. Tachea hortensis.
IX. Mesodon elevata.
X. exoleta.
XI. thyroides.
XI. a. " var. bucculenta.
XII. dentifera.
XIII. Triodopsis appressa.
XIII. a. Mesodon Columbiana (*labiosa*) Fig. 1.
divesta (Fig. 2).
XIV. Triodopsis palliata.
XV. obstricta.
XVI. Arionta tudiculata.
XVII. Fig. 1. Vallonia pulchella.
2. Zonites minusculus.
3. Strobila labyrinthica.
4. Zonites fulvus.
XVIII. Aglaja fidelis.
XIX. Arionta Townsendiana.
XX. Macrocyclis Vancouverensis.
XXI. concava.
XXII. Mesodon profunda.
XXII. a. Fig. 1. Macrocyclis sportella.
Fig. 2. Zonites nitidus.
Fig. 3. Gundlachi.
XXIII. Mesodon Sayii.
XXIV. Patula solitaria.

XXV. Patula alternata.
XXVI. Cumberlandiana.
XXVI. a. strigosa.
XXVII. Triodopsis tridentata.
XXVIII. fallax.
XXIX. Fig. 1. Zonites viridulus.
Fig. 2. indentatus.
Fig. 3. arboreus.
Fig. 4. cellarius.
XXIX. a. There are two plates of this. That engraved by Delarue is as follows: —
Fig. 1. Triodopsis loricata.
Fig. 2. Zonites capsella.
Fig. 3. Ottonis (= arboreus).
Fig. 4. Microphysa incrustata.
The other, engraved by Duthie, has
Fig. 1. Zonites capsella.
Fig. 2. Microphysa vortex. Other figures as in the Delarue plate.
XXX. Fig. 1. Patula perspectiva.
Fig. 2. striatella.
Fig. 3. Zonites limatulus.
Fig. 4. internus.
XXXI. Zonites fuliginosus.
XXXII. lævigatus.
XXXIII. subplanus.
XXXIV. inornatus.
XXXV. ligerus.
XXXVI. intertextus.
XXXVII. Fig. 1. Zonites suppressus.
Fig. 2. lasmodon.
Fig. 3, 4. gularis.
XXXVIII. Polygyra septemvolva. The outer figures are var. volvoxis.
XXXIX. Fig. 1. Polygyra septemvolva, var. volvoxis.
Fig. 2. Troostiana.
Fig. 3. pustula.
Fig. 4. fastigans.
XL. Fig. 1. Left hand, Polygyra auriculata.
Right hand, auriformis.
Fig. 2. Polygyra auriformis.
XL. a, Fig. 1. Polygyra leporina.
Fig. 2. Stenotrema maxillatum. N. B. The enlarged view of the aperture is misplaced with Fig. 3 on the plate engraved by Delarue. It is correctly placed on that engraved by Duthie, there being two plates of XL. a.
Fig. 3. Stenotrema germanum.
Fig. 4. Polygyra vultuosa.
XLI. Stenotrema monodon. The upper transverse line represents the variety FRATERNA, the two central transverse lines the var. LEAII.

XLII. Fig. 1. Zonites demissus.
Fig. 2. Mesodon jejuna.
Fig. 3. Stenotrema hirsutum.
Fig. 4. stenotrema.
XLIII. Pomatia Buffoniana: a Mexican species omitted from this volume. See Vol. II.
XLIV. Fig. 1. Stenotrema spinosum.
Fig. 2. Edgarianum.
XLV. Fig. 1. Polygyra Texasiana.
Fig. 2, 3. Triodopsis inflecta.
XLVI. Hemitrochus varians, var. ζ, η, θ. ι.
XLVII. α, β, γ, δ, ϵ.
XLVIII. Fig. 1. Helicodiscus lineatus.
Fig. 2. Zonites vortex.
Fig. 3. multidentatus.
XLIX. Fig. 1. Dorcasia Berlandieriana.
Fig. 2. griscola.
L. Fig. 1. Stenogyra decollata.
Fig. 2. Bulimulus serperastus.
LI. Fig. 1. dealbatus.
Fig. 2. Schiedeanus.
LI. a. alternatus, upper and lower figures.
dealbatus, middle transverse line of figures.
LI. b. alternatus.
LII. Fig. 1. Pupa fallax.
Fig. 2. modica.
Fig. 3. Acantinula harpa.
Fig. 4. Ferussacia subcylindrica.
LIII. Fig. 1. Carychium exiguum, a species of Limnophila, omitted from this volume. See Vol. IV.
Fig. 2. Blauneria pellucida. See Vol. IV.
Fig. 3. Stenogyra gracillima.
Fig. 4. octonoides.
LIV. Orthalicus undatus.
LV. Liguus fasciatus.
LVI. "
LVII. "
LVIII. Bulimulus multilineatus.
LIX. Glandina truncata.
LX. "
LXI. Fig. 1. Glandina decussata.
Fig. 2. truncata var.
LXII. Fig. 1. Vanuxemensis.
Fig. 2. truncata var.
LXII. a. bullata.
LXIII. Fig. 1, 2. Tebennophorus Caroliniensis.
Fig. 3. Pallifera dorsalis.
LXIV. Fig. 1. Arion fuscus.

Fig. 2. Limax agrestis.
Fig. 3. campestris.
LXV. Fig. 1. flavus — with eggs.
Fig. 2. Arion fuscus.
LXVI. Fig. 1. Ariolimax Columbianus, with the internal plate, head, and mantle.
Fig. 2. Arion foliolatus with the surface enlarged. Not an Arion. See p. 225.
LXVII. Veronicella Floridana.
LXVII. a. Fig. 1. Vitrina limpida.
Fig. 2. Succinea Concordialis.
Fig. 3. ovalis, Gld., not of Say.
Fig. 4. Nuttalliana.
LXVII. b. Fig. 1. Succinea campestris.
Fig. 2. Totteniana.
Fig. 3. obliqua.
LXVII. c. Fig. 1. luteola.
Fig. 2. aurea.
Fig. 3. Oregonensis.
Fig. 4. avara.
LXVIII. Strophia incana.
LXIX. Fig. 1. Macroceramus Kieneri: the outline natural size.
Fig. 2. Cylindrella Poeyana, with enlarged view of aperture and apicial whorls.
Fig. 3. Cylindrella jejuna.
LXX. Fig. 1. Pupa rupicola.
Fig. 2. contracta.
Fig. 3. muscorum.
Fig. 4. armifera.
LXXI. Fig. 1. Vertigo milium.
Fig 2. Gouldi.
Fig. 3. Pupa decora.
Fig. 4. Vertigo modesta = ovata.
LXXII. Fig. 1. Pupa pentodon.
Fig. 2. variolosa.
Fig. 3. Vertigo simplex.
Fig. 4. Pupa corticaria.
LXXII. a. Chondropoma dentatum. A pectinate species not included in this volume. See Vol. IV.
LXXIII. Helicina orbiculata: the lower line is Hel. tropica. See Pl. LXXII. a.
LXXIV. Fig. 1. Helicina occulta (recent). See Pl. LXXII. a.
Fig. 2. " (fossil).
Fig. 3. orbiculata.
Fig. 4. chryosocheila.

XI. EXPLANATION OF PLATES OF VOL. V.

Plate I.

Lingual dentition of

A. Glandina truncata.
B. Macroeyclis Vancouverensis.
C. concava.
D. Voyana.
E. Duranti.
F. Limax maximus.
b. inner marginals.
c. outer marginals.
G. Limax flavus.
H. agrestis.
I. campestris.
J. Hewstoni.
K. montanus, var. eastaneus.
L. occidentalis (see p. 149).

Plate II.

Central, lateral, and marginal teeth of

A. Vitrina Pfeifferi.
B. exilis.
C. limpida.
D. Zonites Gundlachi.
E. fulvus.
F. lævigatus.
G. cellarius.
H. inornatus.
I. Zonites fuliginosus.
J. friabilis.
K. capnodes.
L. intertextus.
M. ligerus.
N. limatulus.
O. demissus.
P. sculptilis.

Plate III.

Lingual dentition of

A. Zonites nitidus.
B. cerinoideus.
C. Elliotti.
D. exiguus.
E. viridulus.
F. arboreus.
G. indentatus.
H. minusculus.
I. Binneyanus.
J. suppressus.
K. gularis.
L. Zonites placentula.
M. milium.
N. multidentatus.
O. lasmodon.
P. ferreus.
Q. internus.
R. significans.
S. Mierophysa inerustata.
T. vortex.
U. Ingersolli.

Plate IV.

Lingual dentition of

A. Patula perspectiva.
B. striatella.
C. Patula asteriscus.
D. Cumberlandiana.

E. Patula alternata.
F. mordax.
G. Cooperi.
H. strigosa.
I. Idahoensis.
J. Hemphilli.
K. solitaria.
L. Hemitrochus varians.
M. Helicodiscus lineatus.
N. Holospira Goldfussi.
O. Tebennophorus Caroliniensis.
P. Stenogyra subula.
Q. decollata.
R. Ferussacia subcylindrica.
S. Pupa rupicola.
T. fallax.

Plate V.

Lingual dentition of

A. Strophia incana.
B. Onchidella borealis.
C. Arion fuscus.
D. Ariolimax niger.
E. Columbianus.
F. Californicus.
G. Andersoni.
H. Hemphilli.
I. Prophysaon Hemphilli.
J. Hemphillia glandulosa.
K. Binneya notabilis.
L. Pallifera dorsalis.
M. Wetherbyi.
N. Acanthinula Hubbardi.
O. labyrinthica.
P. Veronicella Floridana.
Q. Gonostoma Yatesi.

Plate VI.

Lingual dentition of

A. Polygyra auriculata.
B. uvulifera.
C. pustuloides.
D. Troostiana.
E. pustula.
F. leporina.
G. Texasiana.
H. fastigans.
I. Dorfeuilliana.
J. Polygyra Febigeri.
K. cereolus.
L. septemvolva.
M. Carpenteriana.
N. Postelliana.
O. Hazardi.
P. espiloca.
Q. Mooreana.
R. auriformis.

Plate VII.

Lingual dentition of

A. Polygyrella polygyrella.
B. Stenotrema spinosum.
C. barbigerum.
D. Edvardsi.
E. stenotremum.
F. hirsutum.
G. germanum.
H. monodon.
I. Triodopsis Van Nostrandi.
J. loricata.
K. Rugeli.
L. Triodopsis fallax.
M. tridentata.
N. Hopetonensis.
O. palliata.
P. obstricta.
Q. appressa.
R. Harfordiana.
S. inflecta.
T. Turricula terrestris.
U. Vallonia pulchella.
V. Dorcasia griseola.

Plate VIII.

Lingual dentition of

A. Mesodon exoleta.
B. Sayii.
C. Roemeri.
D. Wetherbyi.
E. Pennsylvanica.
F. Downieana.
G. major.
H. Mitchelliana.
I. Clarki.
J. dentifera.
K. Mesodon albolabris.
L. multilineata.
M. elevata.
N. Mobiliana.
O. devia, from Salmon River.
P. Columbiana.
Q. profunda.
R. Wheatleyi.
S. thyroides.
T. elausa.

Plate IX.

Lingual dentition of

A. Fruticicola rufescens.
B. Aglaja infumata.
C. fidelis.
D. Arionta arrosa.
E. tudiculata.
F. Nickliniana.
G. redimita.
H. Ayresiana.
I. Kelletti.
J. sequoicola.
K. ramentosa.
L. Arionta Stearnsiana.
M. Traski.
N. ruficincta.
O. exarata.
P. facta.
Q. Townsendiana.
R. Dupetithouarsi.
S. Californiensis.
T. Diabloensis.
U. Carpenteri.

Plate X.

Lingual dentition of

A. Glyptostoma Newberryanum.
B. Euparypha Tryoni.
C. Tachea hortensis.
D. Pomatia aspersa.
E. Bulimulus dealbatus.
F. Dormani.
G. Liguus fasciatus.
H. Orthalicus undatus.
I. Succinea Sillimani.
J. Succinea Stretchiana.
K. avara.
L. lineata.
M. ovalis.
N. effusa.
O. campestris.
P. obliqua.
Q. Macroceramus Gossei.
R. Cylindrella Poeyana.

Plate XI.

In all the figures of genitalia, the penis sac (p. s.) is represented in its natural position to the left; the genital bladder (g. b.) with its duct (d. g. b.) to the right of the system. They can readily be distinguished without being indicated by lettering. The same may be said of the testicle (t.), epididymis (ep.), accessory gland, (a. g.) prostate (p.), vas deferens (v. d.), retractor of penis sac (r.), ovary (o.), oviduct (ov.), vagina

(v.), external orifice (or.). These are, however, all indicated by their initial letters in Fig. A. The accessory organs when present are all indicated by their initial letters, accessory duct (a. d.), prostate gland (pr. g.), dart sac (d. s.), prepuce (pp.), flagellum (fl.), accessory gland (a. g).

Genitalia of

Fig. A. Patula strigosa.
Fig. B. Binneya notabilis.
Fig. C. Zonites inornatus.
Fig. D. friabilis.
Fig. E. lævigatus.
Fig. F. Limax Hewstoni.
Fig. G. Mesodon Clarki.
Fig. H. Mesodon Mitchelliana.
Fig. I. Columbiana.
Fig. J. Roemeri.
Fig. K. Triodopsis appressa.
Fig. L. Stenotrema monodon.
Fig. M. germanum.

Plate XII.

Genitalia of (*see description of Plate XI.*)

Fig. A. Limax maximus.
Fig. B. montanus.
Fig. C. Ariolimax Columbianus.
Fig. D. Californicus.
Fig. E. Andersoni.
Fig. F. niger.
Fig. G. Ariolimax Hemphilli.
Fig. H. Prophysaon Hemphilli.
Fig. I. var.
Fig. J – K. Hemphillia glandulosa.
χ (see description p. 249).
Fig. L. Macrocyclis Vancouverensis.

Plate XIII.

Genitalia of (*see description of Plate XI.*)

Fig. A. Arionta sequoicola.
χ (see description, p. 368).
Fig. B. Arionta Stearnsiana.
Fig. C. Nickliniana.
Fig. D. Kelletti.
Fig. E. Mormonum.
γ, dart sac.
a. pr. g., accessory prostate gland.
χ (see description, p. 367).
Fig. F. Same: dart.
Fig. G. Same: concretions (see p. 367.)
Fig. H. Arionta Traski.
Vaginal prostate: χ, bulb of same.
Fig. I. Arionta arrosa.

Plate XIV.

Genitalia of (*see description of Plate XI.*)

Fig. A. Arionta Townsendiana.
Fig. B. ruficincta.
Fig. C. Euparypha Tryoni.
1, 2, 3 (see description, p. 377).
Fig. D. Glyptostoma Newberryanum.
Fig. E. Aglaja fidelis.
Fig. F. infumata.
Fig. G. Mesodon clausa.
Fig. H. Stenotrema spinosum.

Plate XV.

Genitalia of (*see description of Plate XI.*)

Fig. A. Triodopsis Hopetonensis.
Fig. B. fallax.
Fig. C. Triodopsis Van Nostrandi.
Fig. D. tridentata.

Fig. E. Triodopsis Rugeli.
Fig. F. inflecta.
Fig. G. Mesodon Pennsylvanica.
Fig. H. Polygyra septemvolva.
Fig. I. Polygyra Troostiana.
Fig. J. Bulimulus Dormani.

Dentition of

Fig. K. Macrocyclis sportella.
Fig. L. Polygyra avara.
Fig. M. Turricula terrestris.
Fig. N. Arionta ptychophora.

Genitalia of

Fig. O. Arionta ruficincta.

Dentition of

Fig. P. A. Mormonum.

Plate XVI.

Central, lateral, transition, and marginal teeth of

Fig. A. Patula Hemphilli.
B. P. Haydeni.
C. Triodopsis introferens, and profile.
D. Polygyra oppilata.
E. Mesodon Christyi.
F. Succinea Nuttaliana.

Jaw of

G. Patula Haydeni.
H. Vitrina limpida.

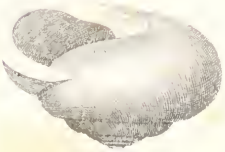
Lingual membrane greatly enlarged, with a line to show transverse row of teeth; the upper margin in the figure corresponding with the posterior margin of the membrane of

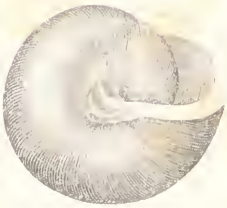
I. Holospira Goldfussi.
J. Glandina truncata.
K. Macrocyclis sportella.
L. Cylindrella Poeyana.
M. Orthalicus undatus
N. Onchidella borealis.
O. Macroceramus Gossei.
P. Veronicella Floridana.
Q. Mesodon albolabris.

Lingual dentition of

R. Succinea Haydeni.
S. Mesodon devia.
T. Stenotrema labrosum.
U. Mesodon divesta.

Helix major





Helix arborabis [illegible]

Helix multilineata, Say.

Helix clausa, Say

Helix Nucklandiana [illegible] *Helix Californiensis* [illegible]

Helix nickliniana.

Helix Pennsylvanica

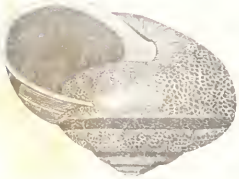
Helix [illegible]

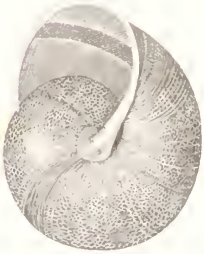
Helix dentifera

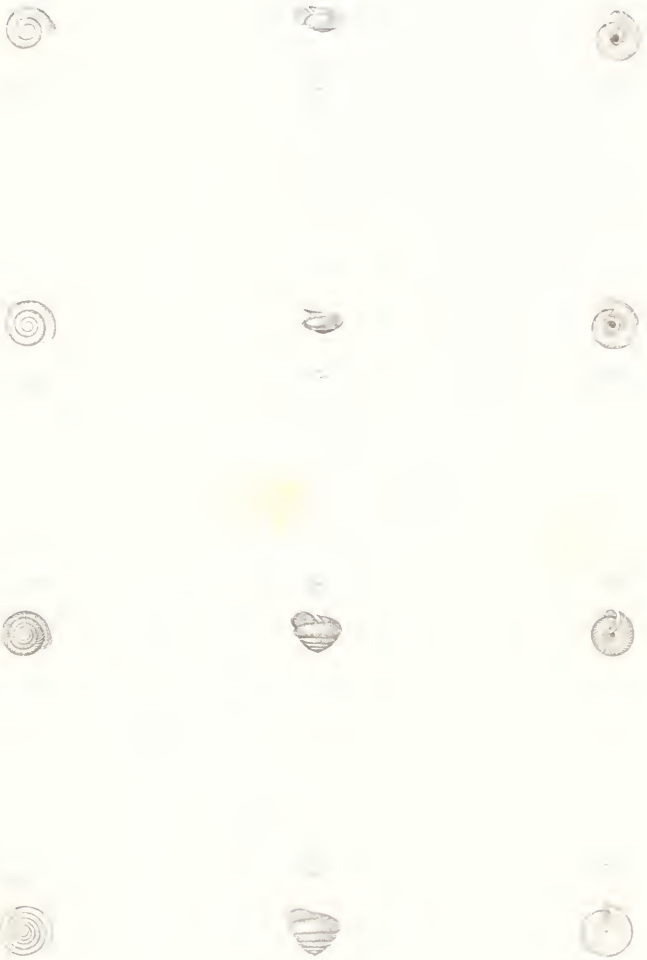
Helix appressa

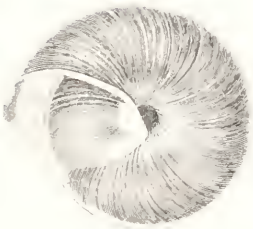
Helix pulchella

Bulla galliata





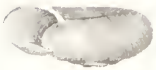




Helix Nuttalliana

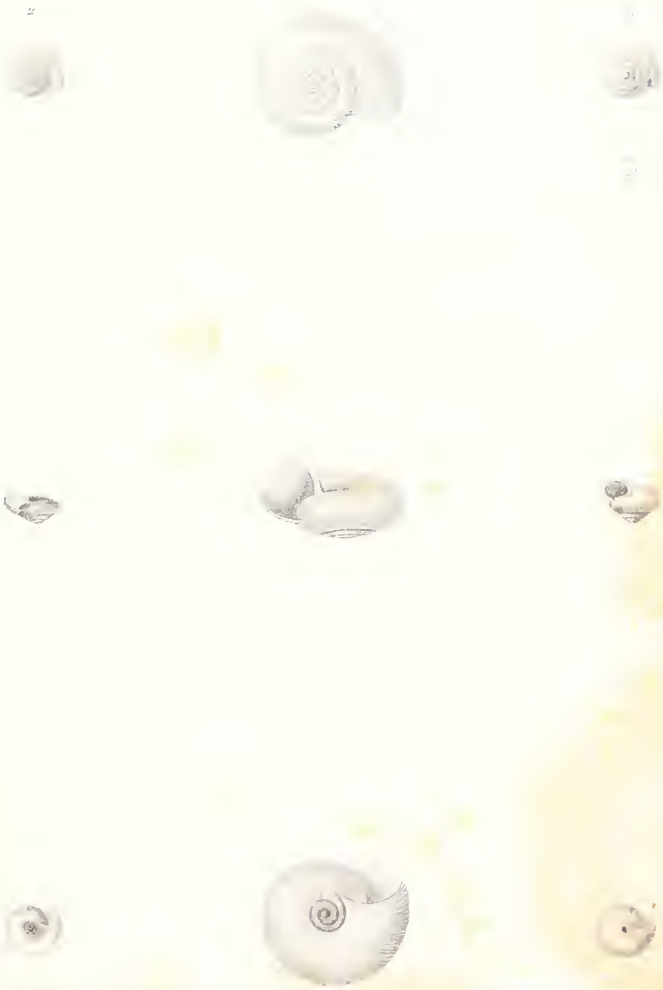
Helix Townsendiana Lea

Helix Vancouverensis



Helix concava Say.

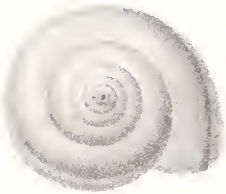
Helix pyramidata

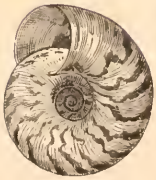


1 *Helix sportella*, Gould 2 *Helix lucida*, Müller

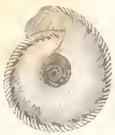
3 *Helix egena*, Say.

Vve Delarue, dir.d Montagne Ste Geneviève 6





Helix alternata. — *Say.*



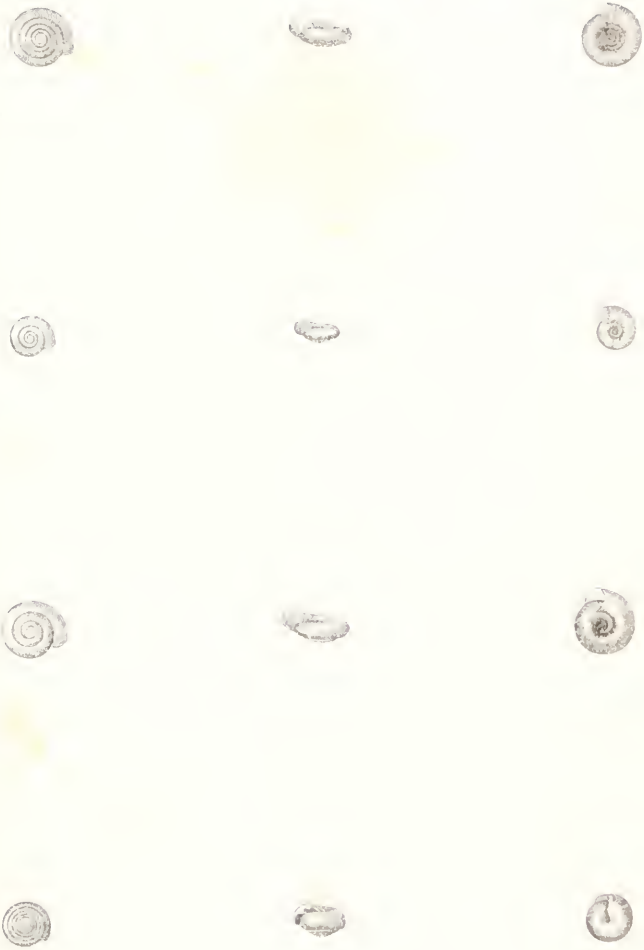
Helix Cumberlandiana

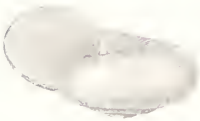
Helix strigosa Gould

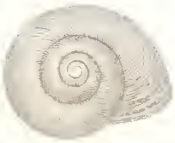
Helix Aridentata [illegible]

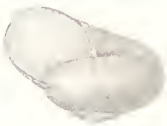
Helix tridentata

Nutting del





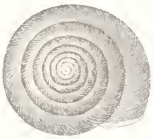


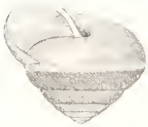


Helix lineibrata.

Helix subplana

Helix tigera





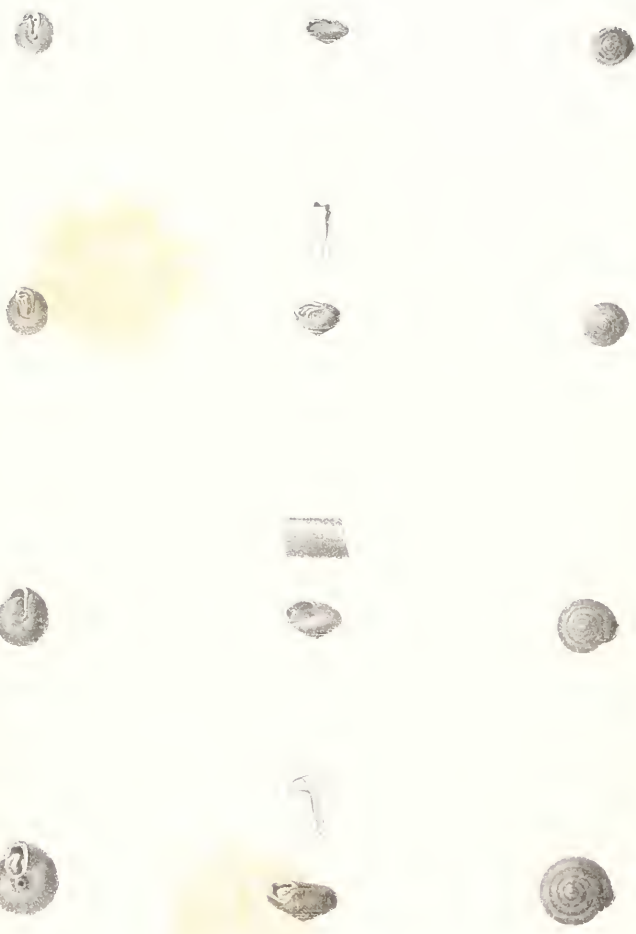
Helix interrupta

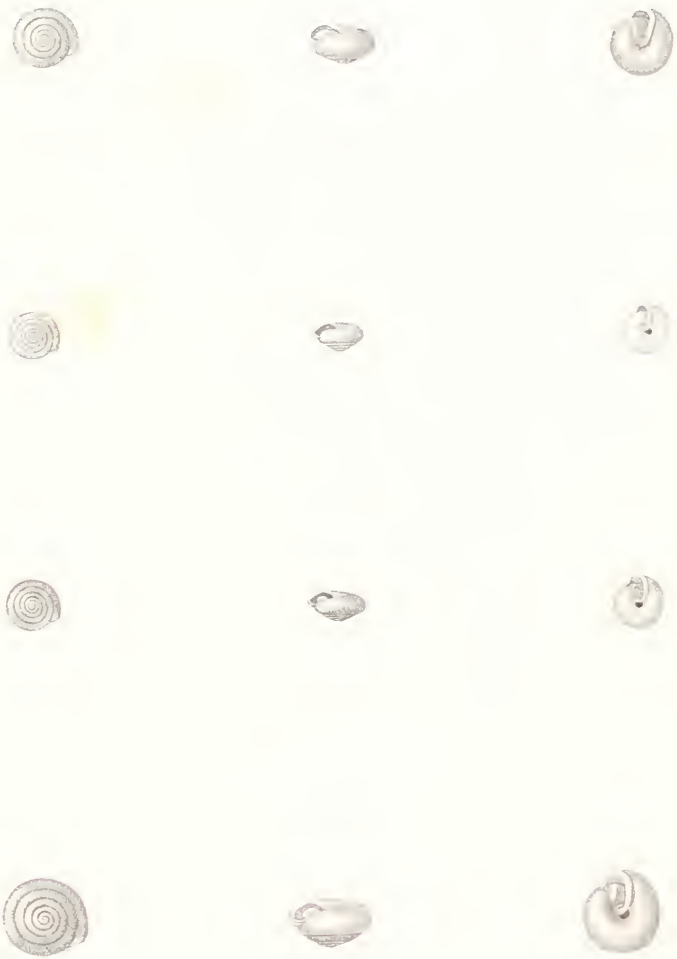
Helix suppressa Say. *Helix carmodelli* [illegible]

3 4 *Helix gularis*, Say.

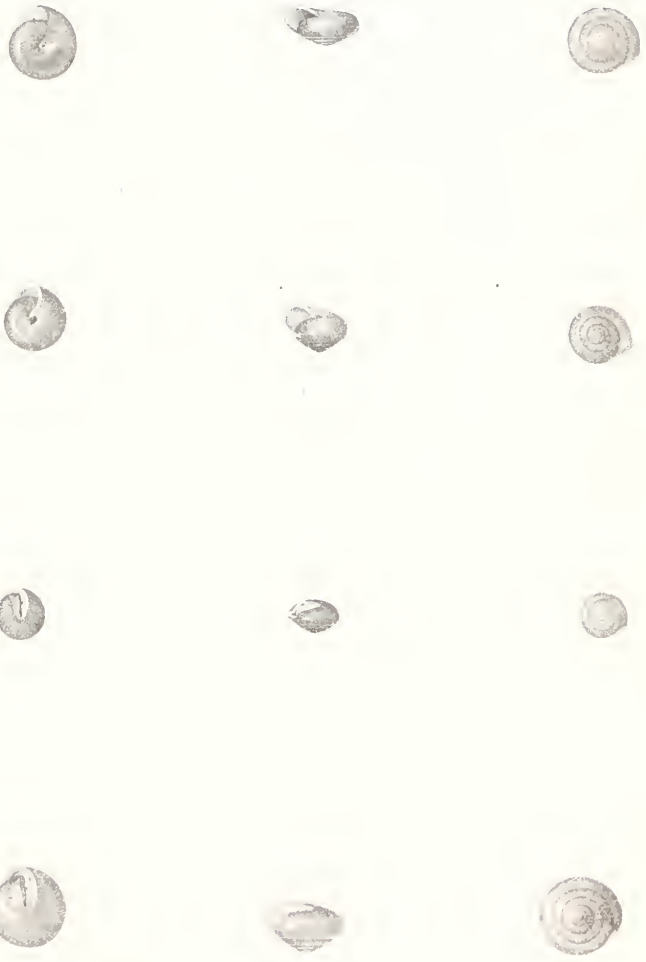
Nuttino del

Helix septemvalva [illegible] [illegible]
plicata [illegible] [illegible]





Helix monodon.



1 *Helix Texasiana* Morrison

2 *H. inflecta*, Say 3 *H. inflecta* Variety

Helix rhodochela

Helix rhodochila

1 Helix lucata Say. *2 Helix velenina* Gould

3 Helix multidentata Binney

Vve Delacre del.t

Helix Berlanderiana, Moricand. *Helix albo zonata*

Mr. Helm [illegible] del. Alex. Lawson

Bulimus decollatus

Bulimus decollatus

1. *Cargchium exiguum* Sav. 2. *Achatina gracillima* Pfeif.
3. *Achatina pellucida* Pfeif. 4. *Bulinus subula* Pfeiffer.

Bulimus zebra, [illegible]

Bulimus fasciatus

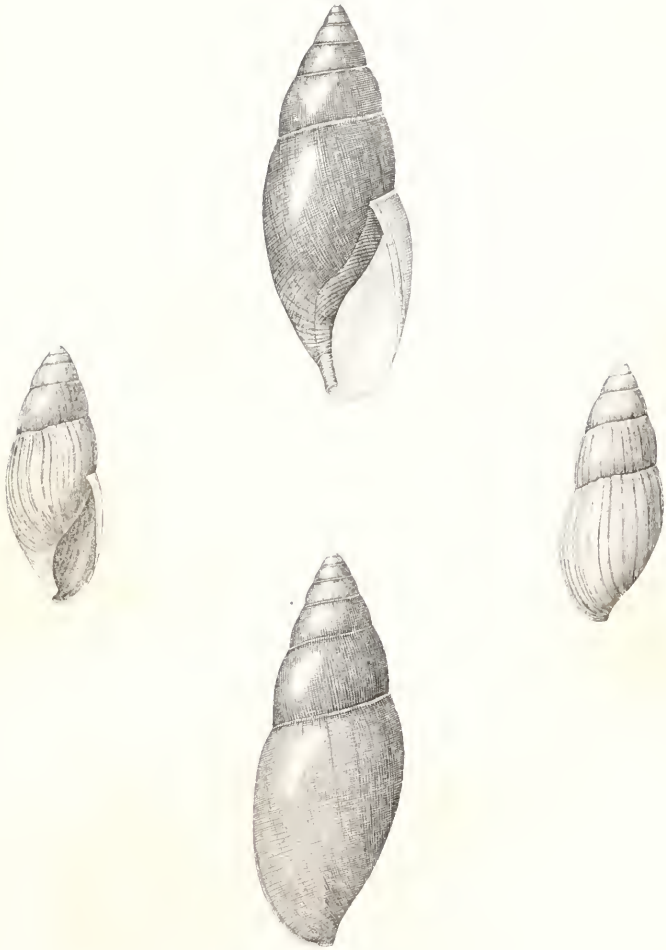
Bulimus fasciatus, Mull.

Miss H. E. Lawson del.

Bulimus fasciatus

Glandina truncata Say.

Glandina truncata



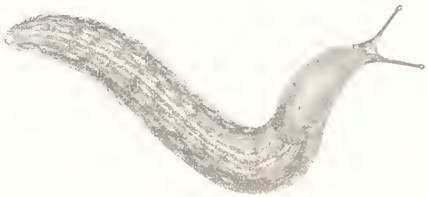
Glandina truncata

Glandina Vanuxemensis

Glandina bullata

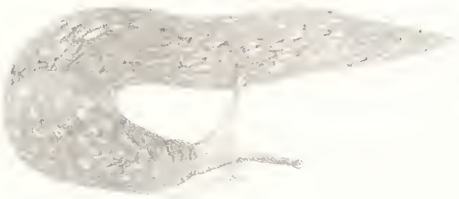
Tiberinophorus Carcinoides [illegible] *surface* [illegible]

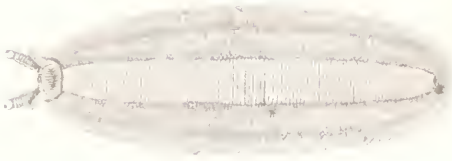
Tiberinophorus dorsalis



Limax hortensis var. Limax agrestis

Limax campestris





Vaginulus Floridanus

1. *Vitrina pellucida*
2. *Succinea concordialis*
3. *Succinea ovalis*
4. *Succinea nuttaliana*

Succinea campestris Sag. — *Succinea Tottenianae* Lin.

3 *Succinea obliqua* Sam.

Pr. Delarue dir.

Succinea lutcola Gmelin. *Succinea oregonensis* Lea

Succinea aurea, Lea *Succinea avara*, Say.

Pupa incana

1. *Cylindrella pontifica* Gould. 2. *C. lactaria* Gould.
3. *C. jejuna* Gould.

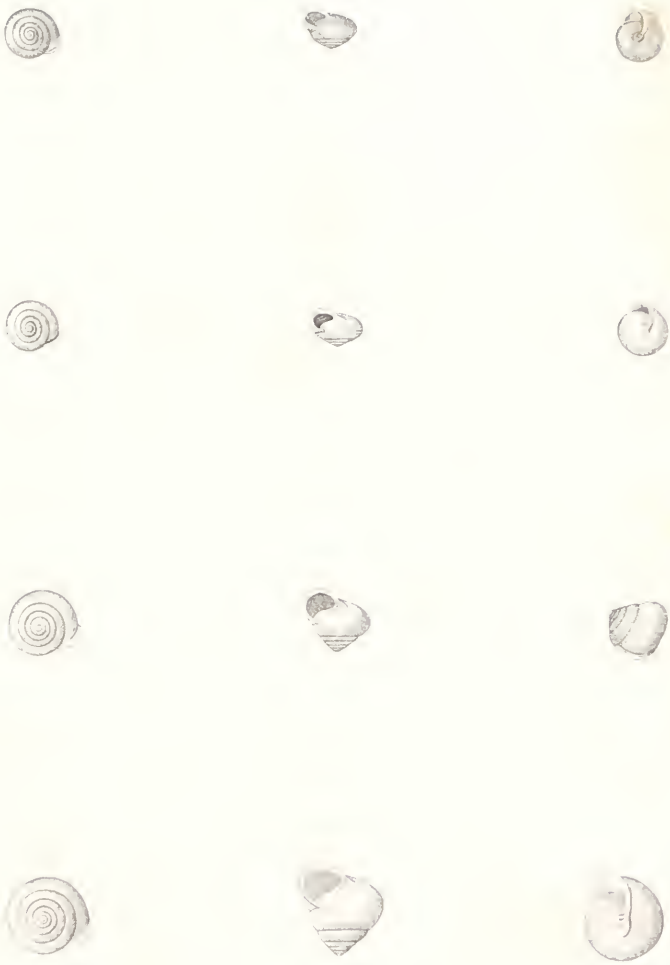
Pupa cupicola Say. 1. *Pupa badia* [illegible]

2. *Pupa contracta* Say. 3. *Pupa sarmigera* [illegible]

Cyclostoma dentatum. Sav.

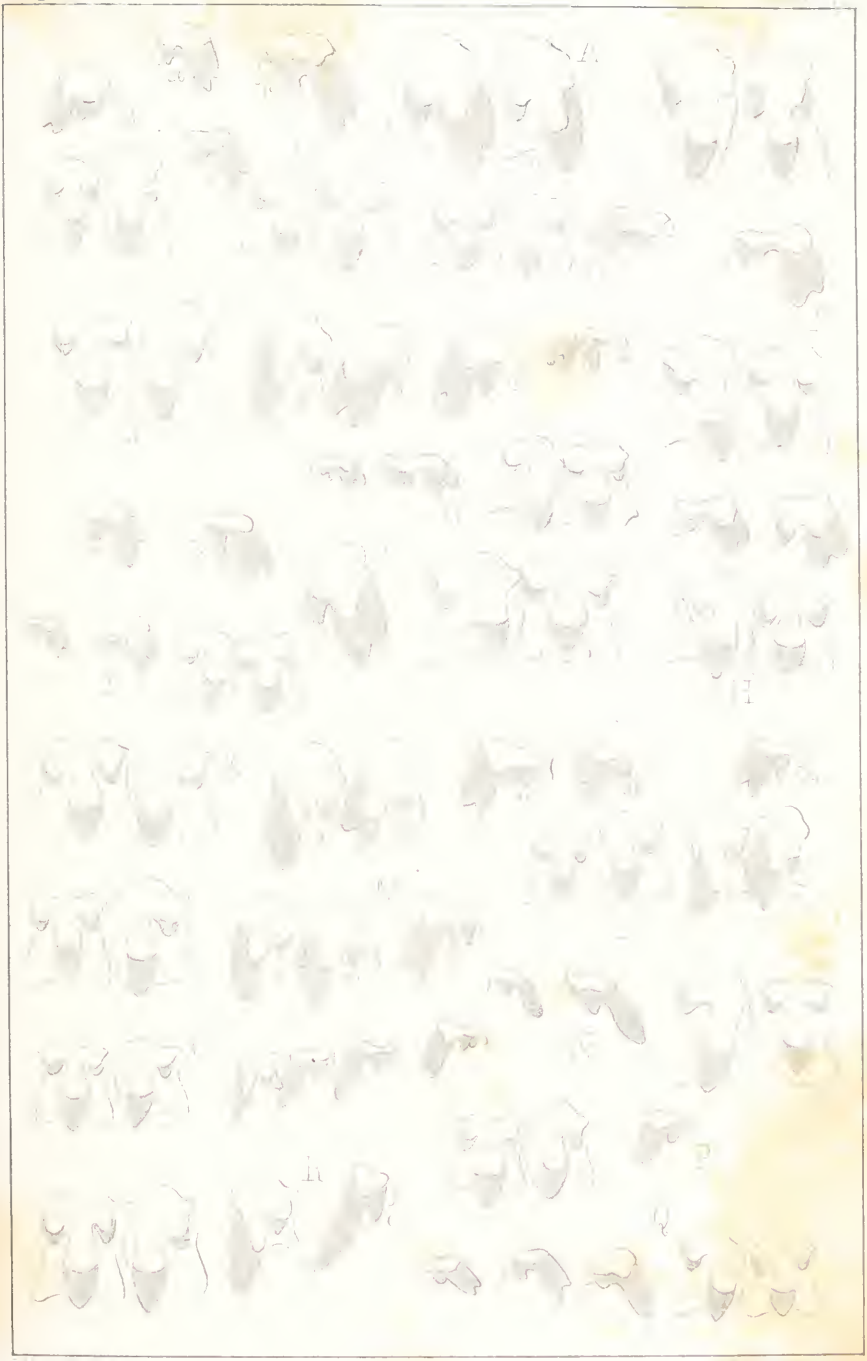
Helicina orbiculata Say.

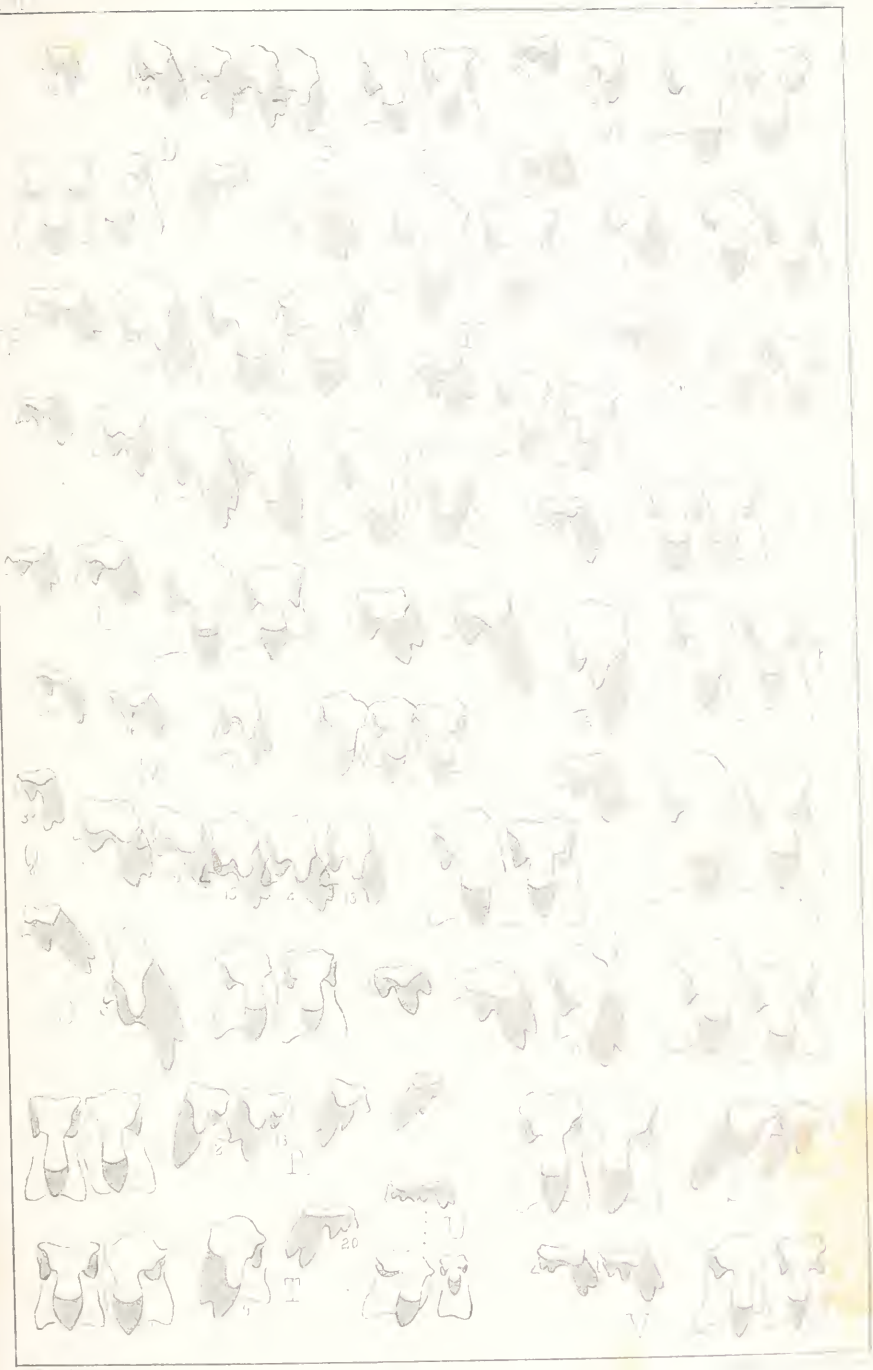
Mrs. Helen E. Dawson del.

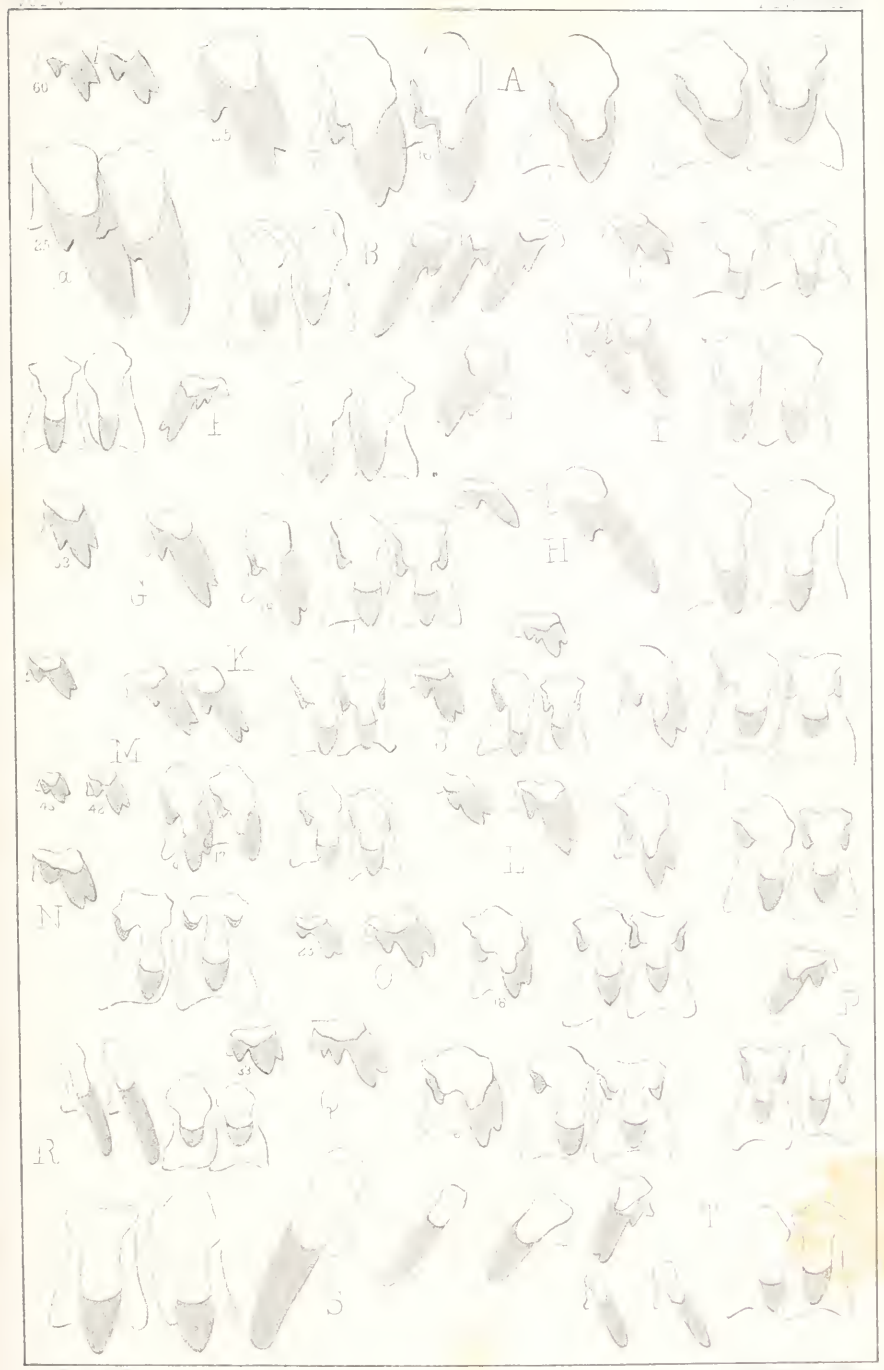


Helicina rubella [illegible]
occulta [illegible]

Helicina orbiculata [illegible]
chrysochila



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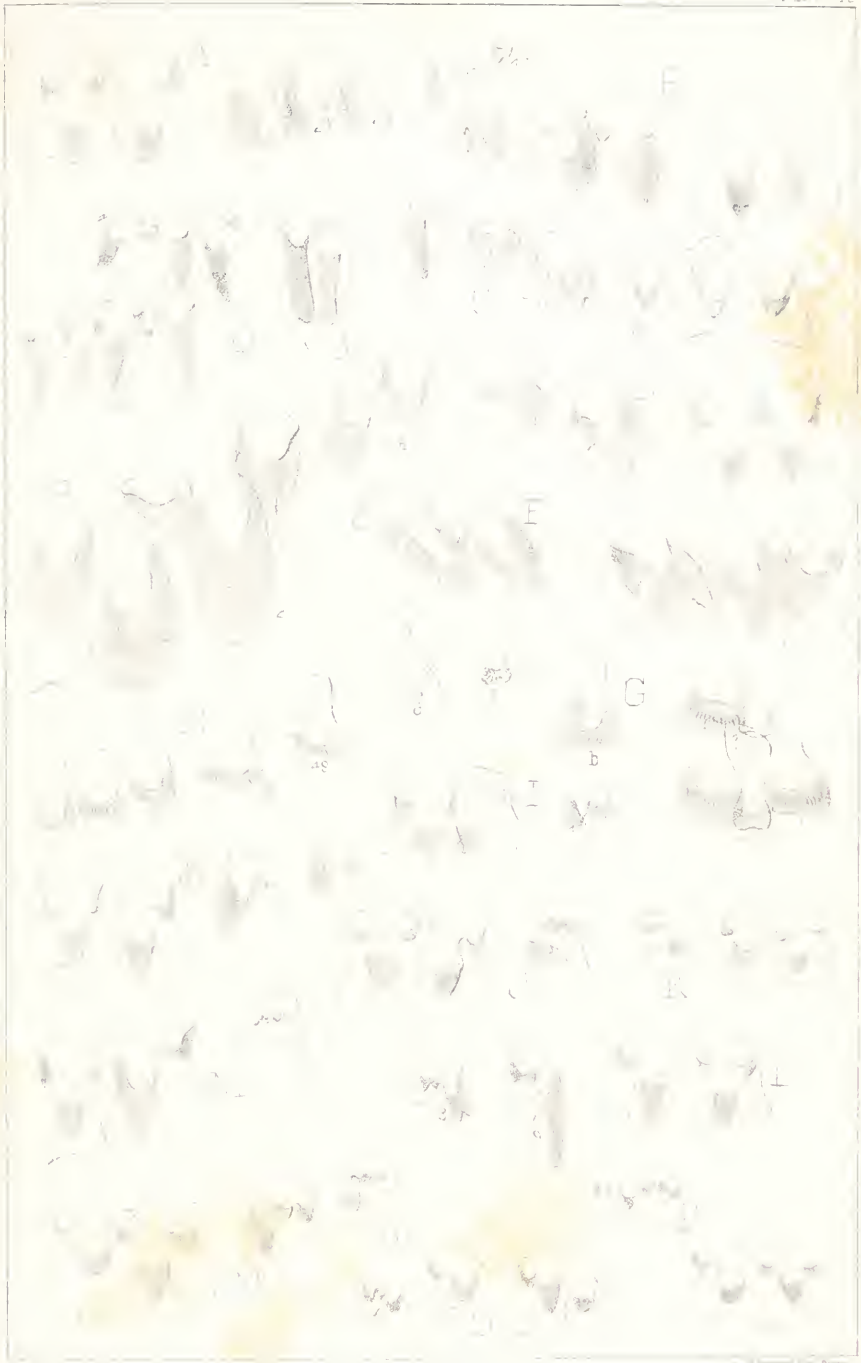
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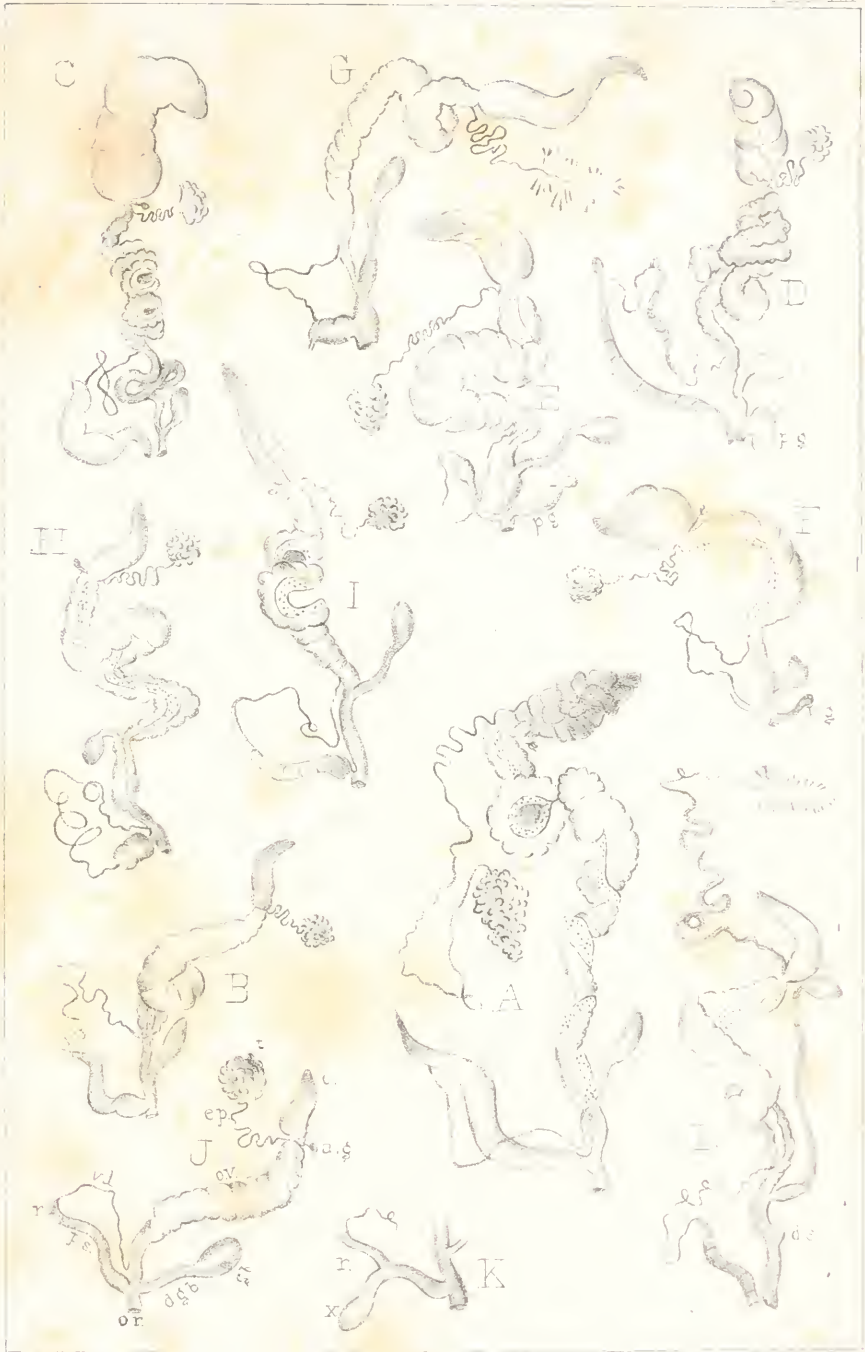

W. G. B. del.

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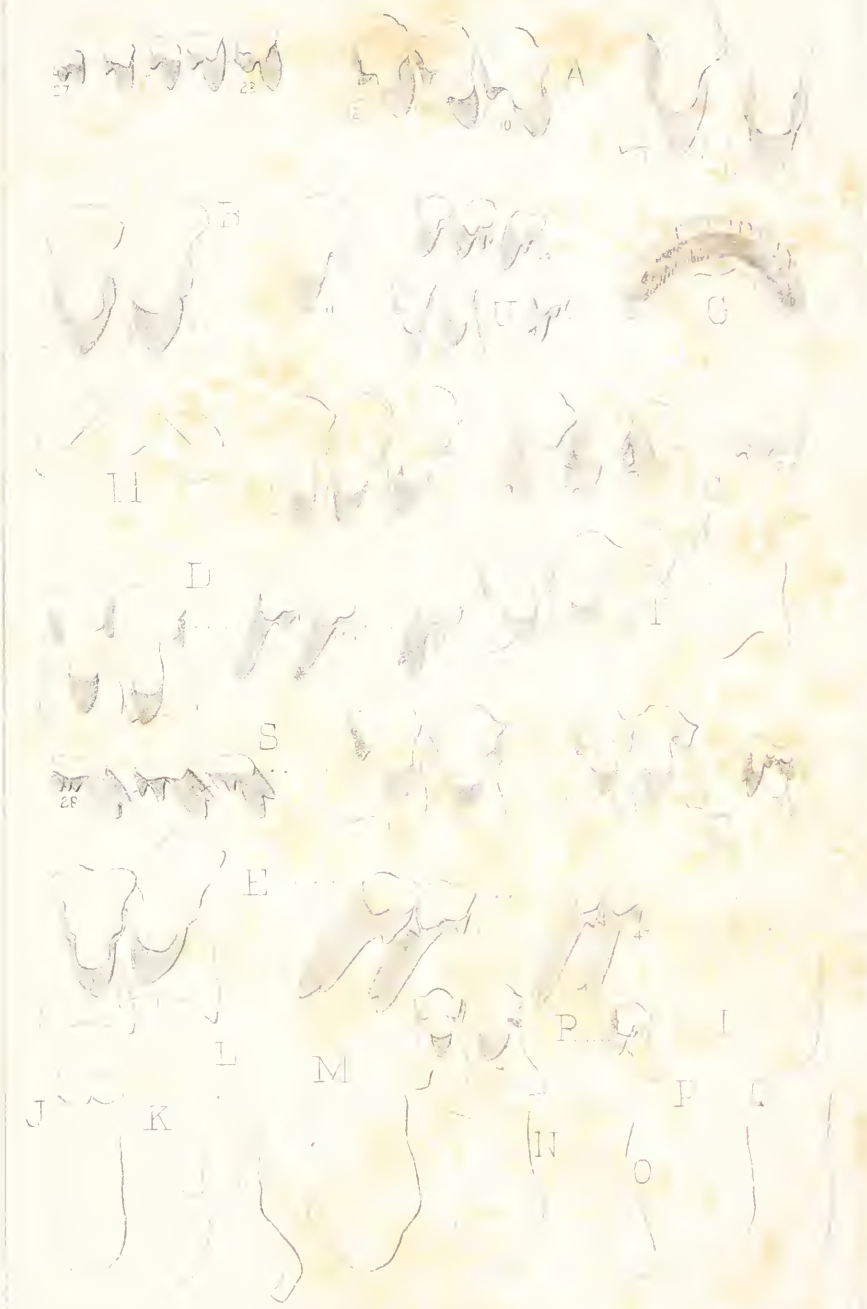
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